

January's Big Event: January 18-22, 2010

By Grant Hicks—General Forecaster

This was a significant storm predicted well in advance. The storm system appeared in computer models over a week ahead of time, and a hazardous weather outlook was issued a week out. In the final day leading up to the storm, Don Simonsen our resident climatology go to guy, decided to place the system in his top ten storms of northern Montana. This is impressive considering common questions for Don from our staff include, “which dinosaurs did you prefer to club for food, or which one did you pedal into work today?” It helps us all that Don has been in northern Montana/western North Dakota weather offices since 1979. So, when he calls it, you know it’s going to be significant. Even with this high probability of something coming through, a few problems with the prediction of the storm and what it was capable of still hampered the forecast up to the last minute.

Before the storm began, the months of December and early January had been snowier than normal. By mid January, a few days of clearing had allowed sunlight to chew into and evaporate some of the snow. This extra moisture in the mostly stagnant flow across northeastern Montana quickly chilled and each evening formed ice fog or what is also known as hoar frost. The constant fog continued and caused delays for Great Lakes Airlines throughout northeast Montana, and in Glasgow, one aircrew was grounded here for three days. The freezing fog also glazed on roads making them slippery and potentially unsafe for many in the public who were trying to get around in order to buy supplies for the actual storm itself.

As uncommon and impressive as the fog was in and of itself, it wasn’t until the first morning of the storms that the impacts began to cause true havoc across the region. Dewpoint temperatures began to rise just ahead of the system and slowly started creating freezing drizzle. The collection of hoar frost was already dense on many power lines in northern areas near the town of Opheim, but new freezing drizzle quickly collected on and iced over the already present hoar frost, in a process called rimming, and one by one many of the telephone poles and electric lines snapped and collapsed under the extra weight of ice causing power outages, spikes, and communication disruptions. While this damage was done before the snow fell it was still partially due to the storm’s excessive early pull of moisture which was not entirely predicted and raised many office eyebrows.



Hoar Frost at the Glasgow High School

On Sunday, January 17th the night shift issued a hazardous weather outlook (HWO) highlighting the potential for heavy snowfall nearly a week ahead of the event. The winter storm watch was issued Tuesday afternoon on the 19th and the winter storm warning was issued Thursday evening. These highlights were in effect for the entire NWS Glasgow twelve county warning area (CWA). The forecast totals of the storm ranged from 8 to 15 inches. The impending storm was accurately forecast with some locations of the CWA receiving the expected 15 inches. Toward the end of the snowfall event, the northwest winds began to howl whipping the fresh pack into a blizzard that forced road closures across much of the CWA. Most areas that received the winter storm warning verified in snowfall. The exception to this was a few stations in the eastern part of the CWA where a dry slot affected the Yellowstone valley and diminished snow totals to well below four inches. Yet even here with less snow, enough light fluffy stuff was able to be carried on the winds to create the whiteout conditions of a blizzard.

What is a dry slot you ask? Dry slots are areas of dry air that wrap up into the low pressure system in something that commonly looks like a swirl pattern on a flat map and can be the bane of the forecaster. These curvy little monsters are very difficult to detect primarily because they commonly originate from levels in the upper atmosphere that are not easily accessible to ground instruments and may not be detected in between the large distances of weather balloon launch sites. Therefore, their presence may never get noticed by models which work to attempt prediction of the weather. In this case, three of the main models that our office used for the storm either never detected a dry slot or were so irregular with the position and timing that the dry slot went unnoticed until the final day, when the winter storm warnings were already out. By the times we finally issue a winter storm warning, our best defense may be just knowing that a dry slot is possible with any major winter storm.

Thus, some uncontrollable uncertainty is born and while forecasters may get lucky enough to nail down the timing of a storm and have a rough idea of its intensity; there will always be times where detail is lost, up until the last minutes of a long predicted event, and unforeseen impacts can catch even the most experienced of us as we meander through data daily.

In the end, the storm hit pretty much as forecast. We started out with heavy snow on Saturday January 23rd, and then more snow and blizzard conditions on Sunday. Unfortunately, there was a gap between the snow on Saturday and the blizzard on Sunday, and some thought the threat was over. Several people ended up traveling on Saturday evening and Sunday morning, and got stuck between Circle and Wolf Point, and Terry and Brockway. Law enforcement was able to rescue some of them, others had to wait it out overnight. Monday and Tuesday brought strong winds, and cold air, bringing wind chill temperatures down into the 40 below range, closing many schools, and making it hazardous for power crews to get out and fix the broken power lines.



Heavy snow, and blizzard conditions covered this car in McCone County, Photo by Sue Burbidge.



Glasgow High School after the snow was plowed off the sidewalks.



NWS Glasgow sidewalk and parking lot.